

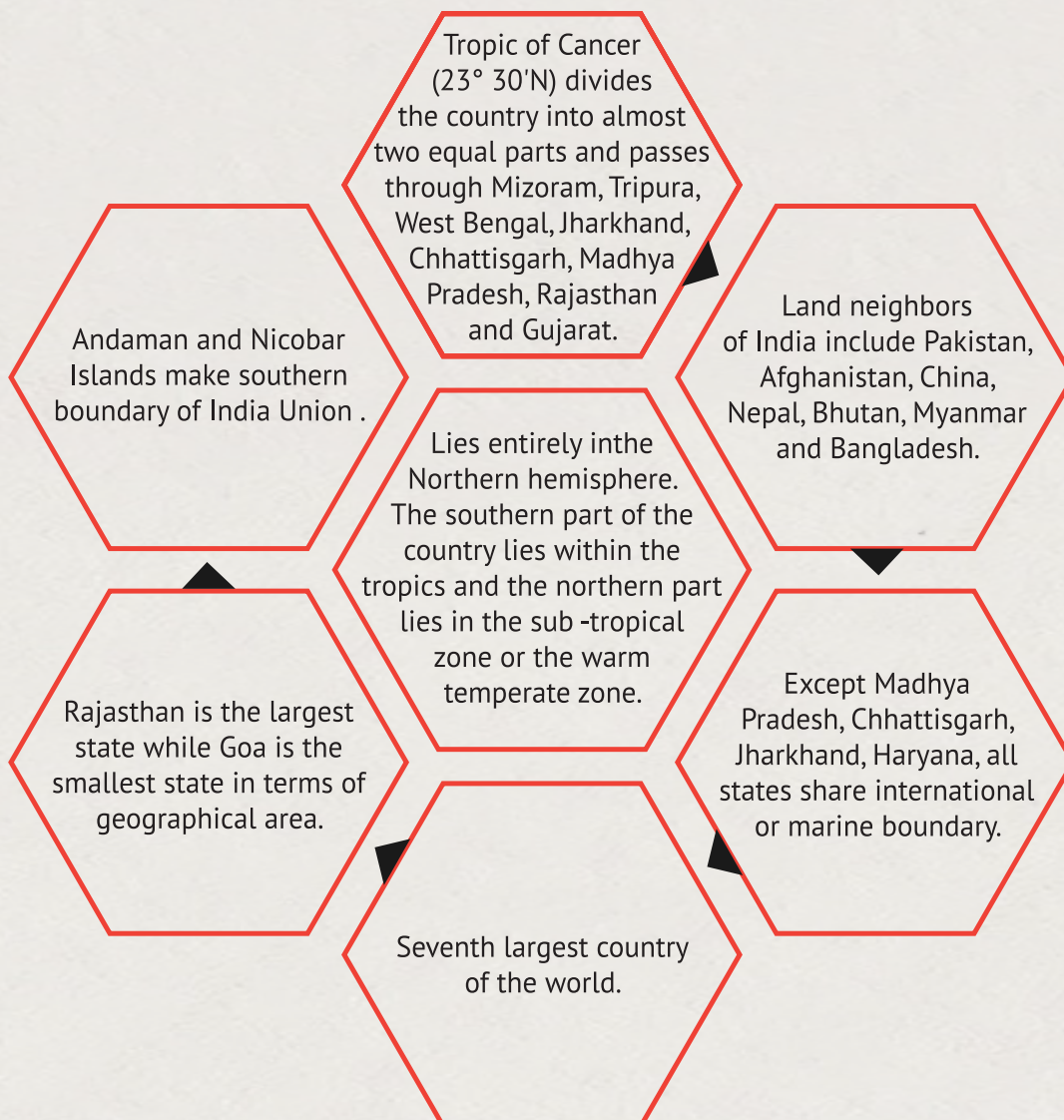


QUICK REVISION MODULE (UPSC PRELIMS 2022) GEOGRAPHY

GEOGRAPHY

LOCATION AND PHYSIOGRAPHY

INDIA: PHYSICAL FORMATION AND PHYSIOGRAPHY



PHYSICAL FORMATION OF INDIA

The geological regions of India are broadly divided into three parts -
(i) The Peninsular Block (ii) The Himalayas and (iii) Indo-Ganga-Brahmaputra Plain

The Peninsular Block

- 1) Oldest rocks of the world from the Precambrian period and the youngest rocks of the Quaternary period.
- 2) Subjected to various vertical movements and block faulting. The rift valleys of the Narmada, relict and residual mountains like the Aravali hills, and block fault like Malda fault in the Eastern India are example of it.
- 3) Contains all types of rocks - igneous, metamorphic and sedimentary rocks.
- 4) Coal belts of Peninsular India were developed during the Gondwana period.
- 5) The black soil of Deccan is due to outpouring of huge quantity of lava during Cretaceous period.

The Himalayas

- 1) Geologically young, weak and flexible and structurally fold mountains.
- 2) About 65-30 million years ago, the Indian plate came very close to the Eurasian plate and started subducting under it which caused lateral compression due to which the sediments of the Tethys were squeezed and folded into three parallel ranges of the Himalayas.
- 3) Consist of four litho tectonic mountain ranges, namely (i) the Trans-Himalaya; (ii) the Greater Himalaya; (iii) the Lesser Himalaya; and (iv) the Shiwalik.

Indo-Ganga-Brahmaputra Plain

- 1) It is an aggradational plain formed by the alluvial deposits of rivers originating in Himalayas in north and the Peninsular plateau in South.

SYNTAXIAL BENDS OF THE HIMALAYAS

- 1) The structures and trends of the Himalaya change sharply at both ends of the range, defining bends called "syntaxes".
- 2) The **western syntaxial bend** is near **Nanga Parbat** where the Indus has cut deep gorge. There is a similar hair-pin bend in Arunachal Pradesh where the mountains take a sharp bend from the eastern to southern direction after crossing the Brahmaputra river.

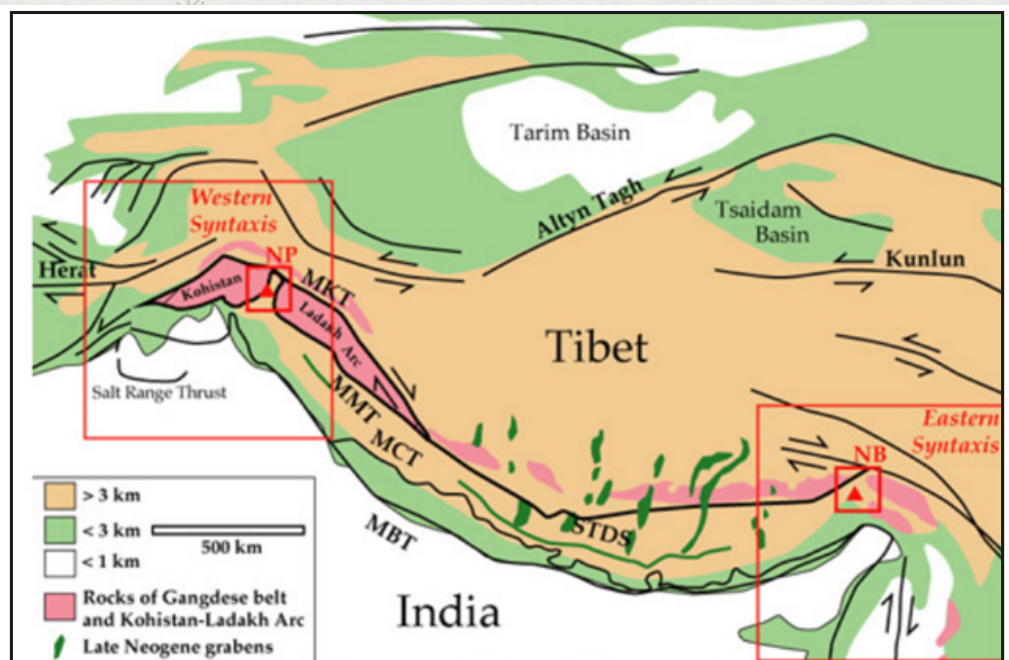
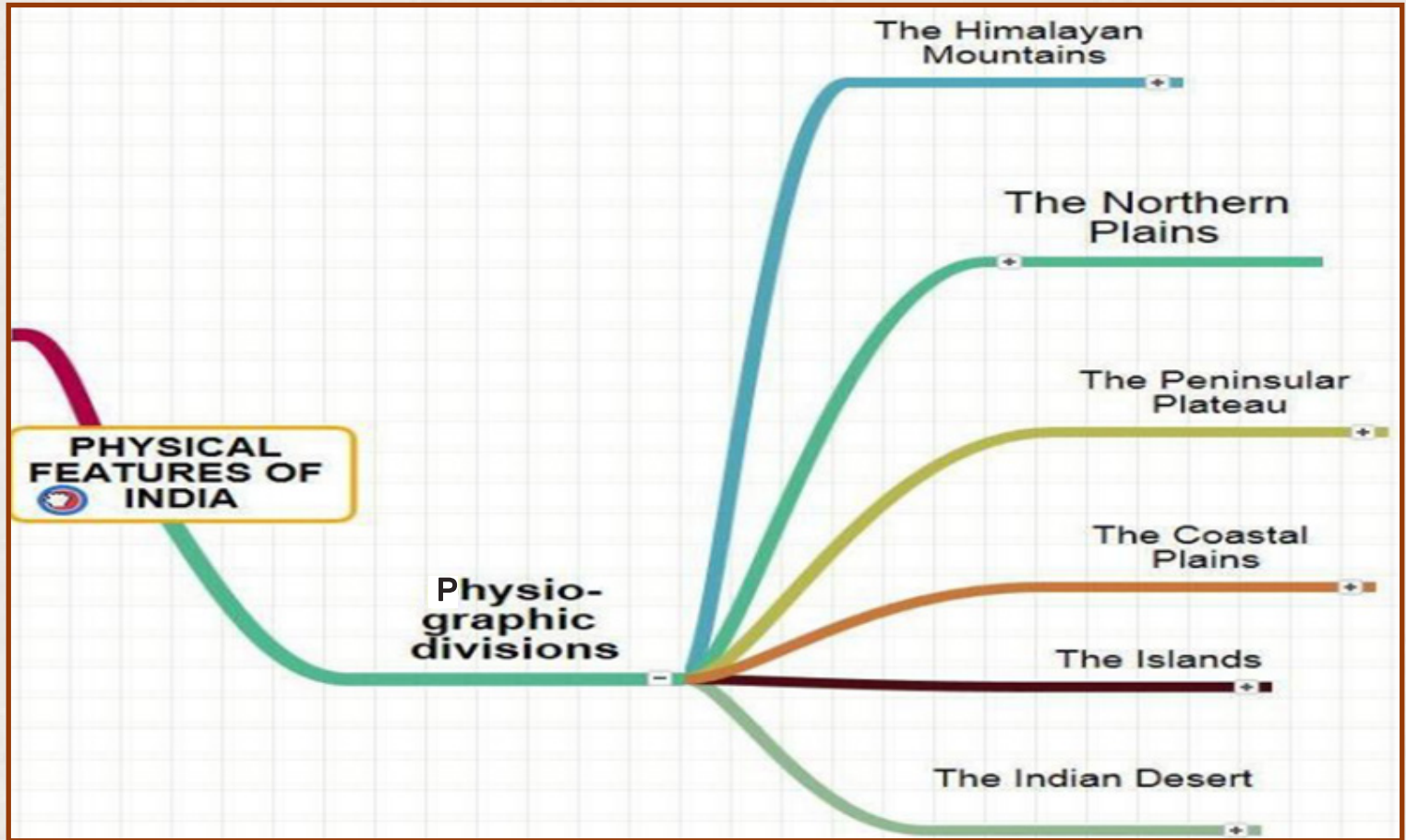


Fig: Himalaya's syntaxes at NP (Nanga Parbat) and NB (Namcha Barwa)



PHYSIOGRAPHY

INDIA CAN BE DIVIDED INTO THE SIX PHYSIOGRAPHIC DIVISIONS:



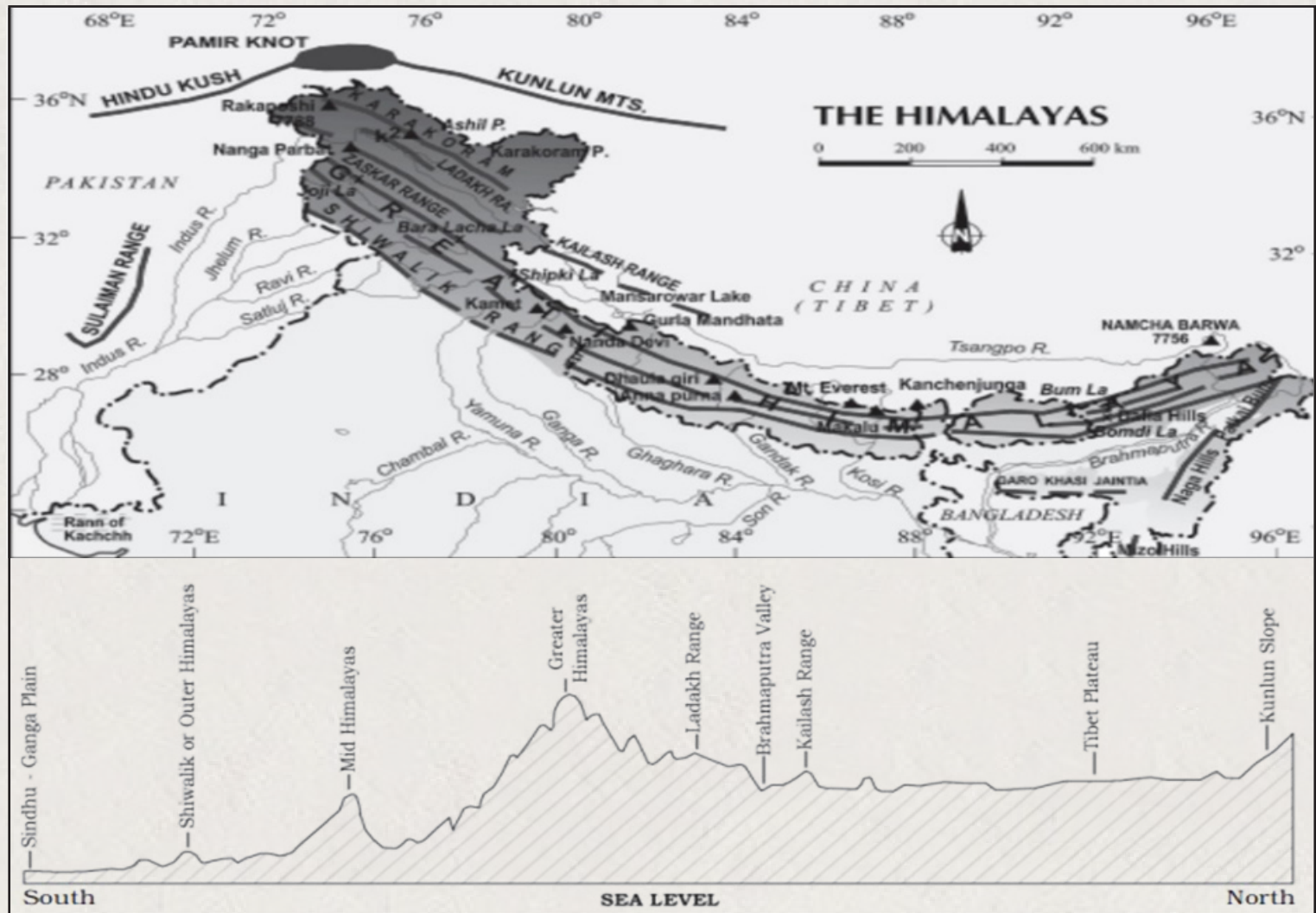
i) HIMALAYAN MOUNTAINS

The altitudinal variations are greater in the eastern half than those in the western half.

Orientation=

1. Northwest to the southeast direction in the northwestern part of India.
2. East-West direction in Darjiling and Sikkim regions.
3. North-South direction in Nagaland, Manipur and Mizoram.

Longitudinal division of Himalayas include – Trans-Himalayas, the Greater Himalayas, the Lesser Himalayas and the Shiwaliks.



Trans-Himalayas

- They are about 40km wide and contain Tethys sediments which are underlain by '**Tertiary granite**'.
- Trans-Himalayas Karakoram, Ladakh and Zaskar Mountain ranges in India.

Greater Himalayas

- Rise abruptly like a wall. They are 25 km wide with an average height above 6100 m.
- Almost all the lofty peaks of the Himalayas Mt. Everest, Kanchenjunga, Nanga-Parbat lies in this zone.
- Very few gaps mainly provided by the **antecedent rivers**, otherwise it is the **most continuous range** in the Himalayan system.

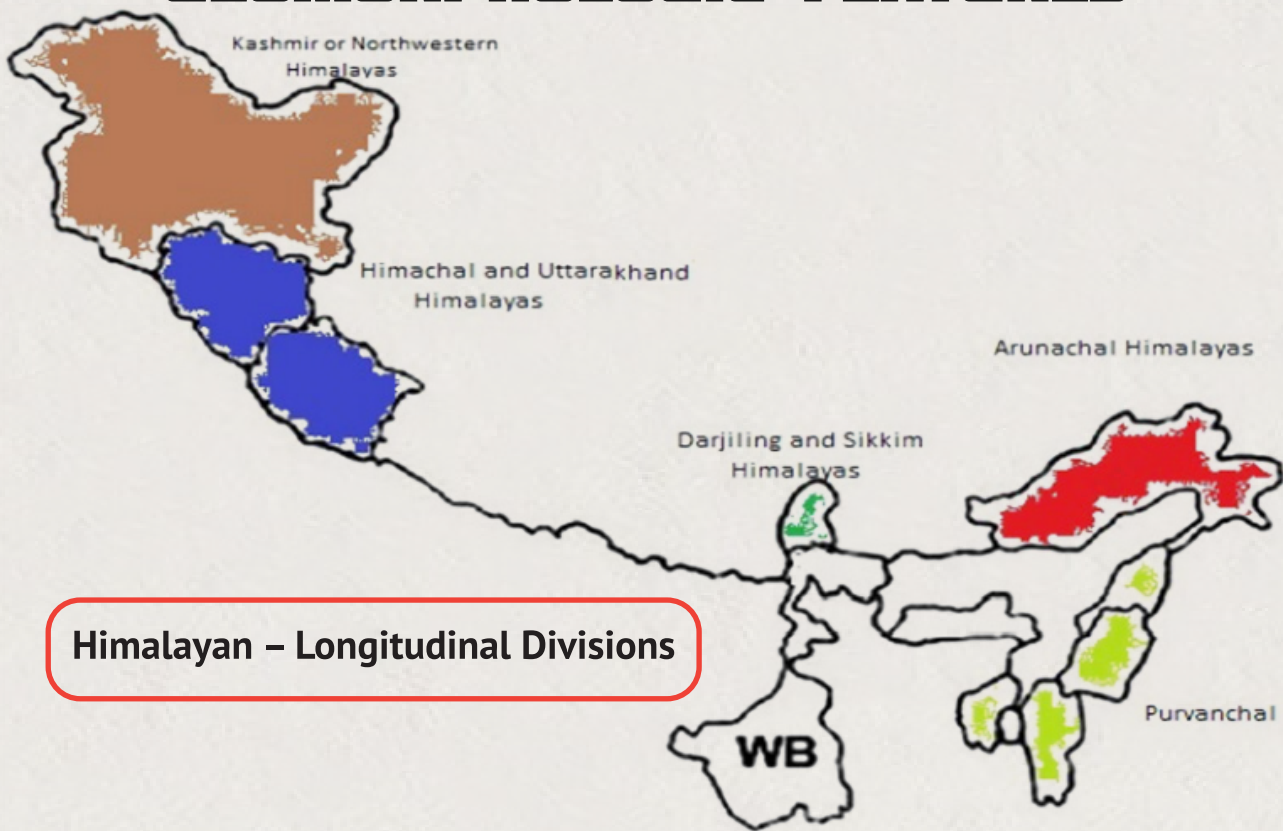
Lesser Himalayas

- The width is about 80 km with an average height of 1300 – 4600 m.
- is subjected to **extensive erosion** due to heavy rainfall, deforestation and urbanization.

Shivaliks

- Extend over a width of 10-50 Km and have an altitude varying between 900 and 1100 m.
- Composed of **unconsolidated sediments** brought down by rivers from the main Himalayan ranges located farther north.
- Landforms like gorges, V-shaped valleys, rapids, waterfalls etc. are indicative of youthful stage of Himalayas.

DIVISION OF HIMALAYA: BASED ON RELIEF, ALIGNMENT OF RANGES AND GEOMORPHOLOGIC FEATURES



Kashmir or Northwestern Himalayas

- Lying between **Indus and Ravi rivers**.
- It has the **largest number of glaciers** in India such as Baltoro, Siachen glaciers.
- Comprise a series of ranges such as the Karakoram, Ladakh, Zaskar and Pir Panjal.
- **Karewas formation**: A thick deposits of glacial clay and other materials embedded with moraines and useful for **saffron cultivation**.
- The southernmost part of this region consists of longitudinal valleys known as '**duns**' such as Jammu duns and Pathankot duns etc.
- Important geographical features = Dal, Wular, Pangong Tso and Tso Moriri lakes; Zoji La pass on the Great Himalayas, Banihal pass on the Pir Panjal, Photu La pass on the Zaskar and Khardung La pass on the Ladakh range.

Himachal and Uttarakhand Himalayas

- Lies between **Ravi and Kali** rivers.
- All the three ranges – the Greater, the Lesser (which is locally known as Dhaoladhar in Himachal Pradesh and Nag tibba in Uttarakhand) and the Shiwalik Himalayas – are well represented in this region.
- 'Shiwalik' and 'Dun formations' (Chandigarh-Kalka dun, Nalagarh dun, Dehra Dun).
- In the Great Himalayan range, the valleys are mostly inhabited by the a nomadic tribes '**Bhotias**', who migrate to '**Bugyals**' (the summer grasslands in the higher reaches) during summer months and return to the valleys during winters.
- Important geographical features: Glaciers like Gangotri, Milam and Pindar; Valley of flowers; Places of pilgrimage such as the Gangotri, Yamunotri, Kedarnath, Badrinath and Hemkund Sahib; Five famous Prayags i.e. Vishnu Prayag, Nand Prayag, Karn Prayag, Rudra Prayag and Dev Prayag; Hill stations such as Dharamshala, Mussoorie, Shimla.



Darjiling and Sikkim Himalayas

- Instead of the Shiwaliks, there are 'duars' which have also been used for the development of **tea gardens**.
- The higher reaches of this region are inhabited by **Lepcha tribes**.
- Moderate slope, thick soil cover with high organic content, well distributed rainfall throughout the year and mild winters favour the tea plantations.
- Passes : **Nathu-La and Jelep-La**.

Arunachal Himalayas

- In this part, the Himalayas rise very rapidly from the plains of Assam.
- Some of the important mountain peaks of the region are Kangtu and Namcha Barwa.
- Some of the prominent tribes like the Monpa, Daffla, Abor, Mishmi, Nishi and the Nagas practice Jhumming (Shifting cultivation).
- Important rivers: Kameng, the Subansiri, the Dihang, the Dibang and the Lohit.

Eastern Hills and Mountains or Purvanchal

- In the north, they are known as Patkai Bum (Arunachal Pradesh), Naga hills (Nagaland), the Manipur hills (Manipur) and in the south as Mizo or Lushai hills (Mizoram).
- Mizoram which is also known as the '**Molassis basin**' is made up of soft unconsolidated deposits.
- Important river: Barak.

2) THE NORTHERN PLAINS

On the basis of geo-climatic and topographical characteristics, the northern plains of India may be divided into the following four meso-regions, namely (i) the plains of Rajasthan (ii) the Punjab-Haryana plains (iii) the Ganga plains and (iv) the Brahmaputra Plains.

The Plains of Rajasthan

- The greater part of these plains is a desert covered with sand dunes and barchans.
- The **Indira Gandhi canal** has led to intensive agriculture in north-western Rajasthan.

The Punjab Haryana Plains

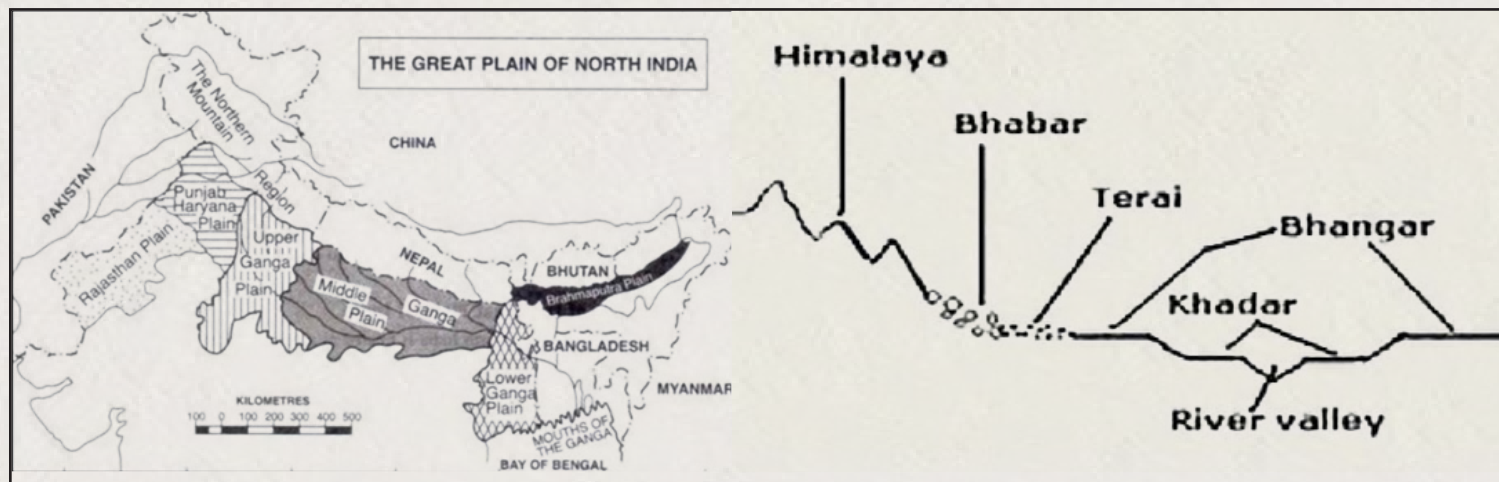
- A plain between two rivers is called doab such as Bist doab between the Beas and Satluj.

The Ganga Plains

- The upper Ganga plain-- Includes the Ganga-Yamuna Doab. It is one of the most productive plains of India in which the Green revolution is a big success. Main crops grown here are sugarcane, wheat, rice, maize, mustard, vegetables etc.
- The middle Ganga plain-- It has thick alluvial deposits with less kankar. Being a low gradient plain, the rivers often change their courses in this region.
- The lower Ganga plain-- It is drained also by Tista, Sankosh, Mahananda, Damodar, Subarnarekha rivers. These plains have filled faults with sediment created during movement of Indian plate.

The Brahmaputra Plain

- Majuli with area of around 930 sq.km. is the largest river island of India and the second largest of world.
- The tributaries descending from Himalayas form a series of alluvial fans.
- The fertile valley is conducive to grow rice and jute. It is also famous for its tea and two national parks – Kaziranga and Manas.



Different section of northern plains of India

From north to south, northern plains can be divided into three major zones: the Bhabar, the Tarai and the Alluvial plains. The alluvial plains can be further divided into the khaddar and the Bhangar.

The Bhabar Plain

- It is a narrow belt ranging between 8-10 km parallel to the Shiwalik foothills at the breakup of the slope.
- The streams and rivers coming from the mountains deposit heavy materials of rocks and boulders, and at times, **disappear** in this zone due to high porosity.
- This load becomes too heavy for the streams to be carried over gentler gradients and gets dumped and spread as a broad low to high cone shaped deposit called alluvial fan at the foothills of Shiwalik.
- It is not suitable for cultivation of crops. Only big trees with large roots thrive in this region. The inhabitants are largely the cattle keeping Gujjars.

The Tarai Tract

- Most of the streams and rivers **re-emerge** here without having any properly demarcated channel, thereby, creating marshy and swampy conditions known as the Tarai.
- This has a **luxurious growth of natural vegetation** and houses a varied wild life.
- Agricultural crops are grown here such as sugarcane, rice, wheat, maize etc.

Bhangar Plains

- The Bhangar represents the upland alluvial tracts formed by the older alluviums.
- The largest part of the northern plains is formed of this older alluvium
- The soil is dark in colour, rich in humus content and productive which contains concentration and nodules of impure calcium carbonate or kankar.

Khadar Plains

- New alluvial deposits along the courses of the rivers are known as the khadar lands.
- Enriched by fresh deposits of silt every year during the rainy season.
- Most of the Khadar land has been brought under the cultivation and devoted to sugarcane, rice, wheat, maize, oilseeds.

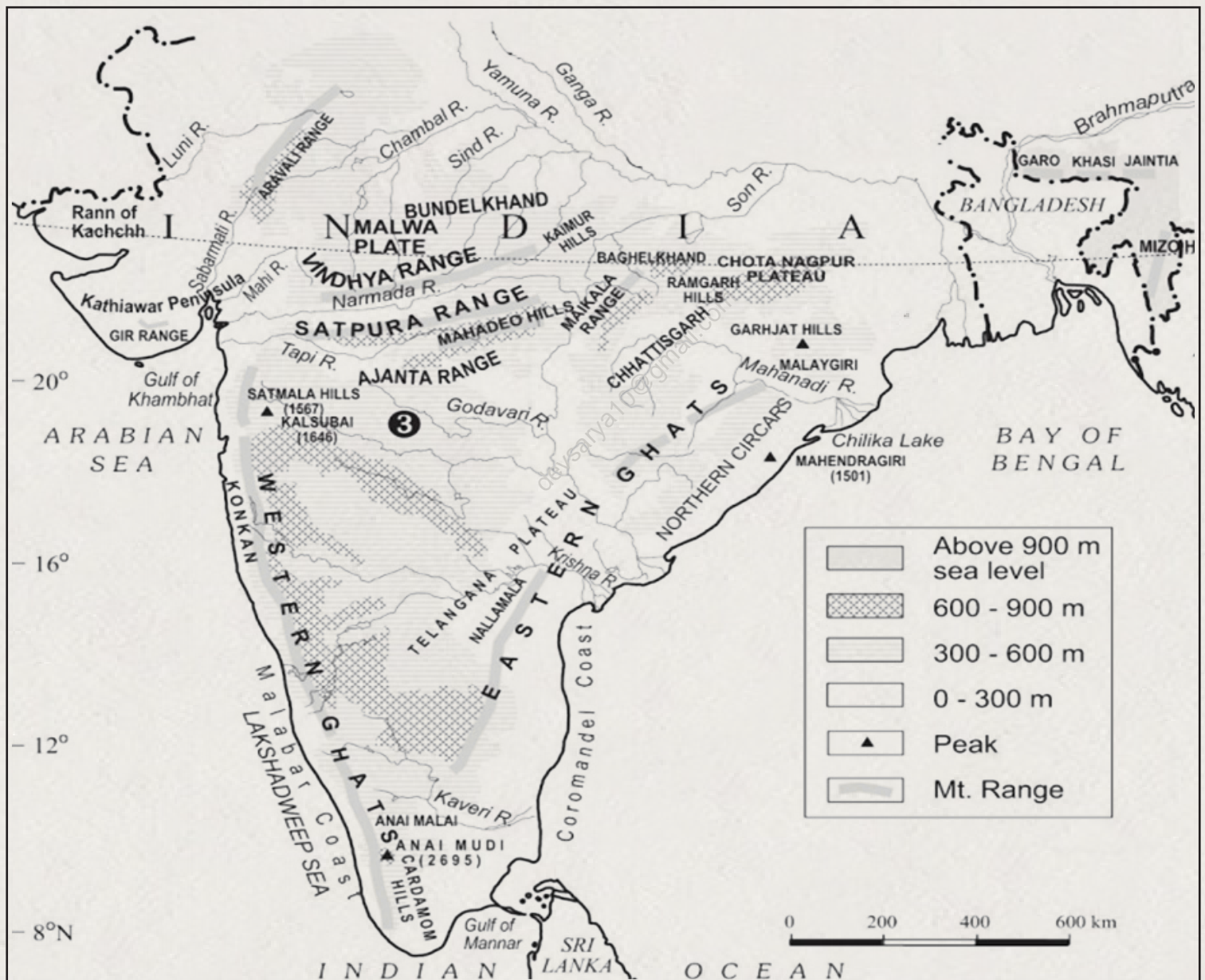
3. THE PENINSULAR PLATEAU

The Great Peninsular plateau is a tableland composed of the old crystalline, igneous and metamorphic rocks. It is one of the oldest and the most stable landmass of India.

One of the distinct features of the peninsular plateau is the black soil area known as **Deccan Trap**.

The Peninsular India is made up of a series of patland plateaus such as the Hazaribagh plateau, the Palamu plateau, the Ranchi plateau, the Malwa plateau, the Coimbatore plateau and the Karnataka plateau, etc.

Delhi ridge in the northwest, (extension of Aravalis), the Rajmahal hills in the east, Gir range in the west and the Cardamom hills in the south constitute the outer extent of the peninsular plateau.



Peninsular India: Relief



The Deccan Plateau

- The shape of this plateau is **triangular** and lies to the south of the river Narmada.
- This is bordered by the Western Ghats in the west, Eastern Ghats in the east and the Satpura, Maikal range and Mahadeo hills in the north.
- **Western Ghats**
 - Locally known by different names such as Sahyadri in Maharashtra, Nilgiri hills in Karnataka and Tamil Nadu and Anaimalai hills and Cardamom hills in Kerala.
 - These are **block mountains** formed due to the downwarping of a part into the Arabian Sea.
 - Comparatively higher in elevation and more continuous than the Eastern Ghats. 'Anaimudi' (2,695 m), the highest peak of Peninsular plateau is located on the Anaimalai hills of the Western Ghats followed by Dodabetta (2,637 m) on the Nilgiri hills.
- **Eastern Ghats**
 - They are discontinuous and irregular and dissected by rivers such as Mahanadi, the Godavari, the Krishna, the Kaveri draining into the Bay of Bengal.
 - Mahendragiri (1,501 metres) is the highest peak in the Eastern Ghats. The Eastern and the Western Ghats meet each other at the Nilgiri hills.

The Central Highlands

- Malwa plateau forms the dominant part of the Central Highlands.
- The part of the Central Highlands which extends to the east of Malwa Plateau is known as Bundelkhand and is further followed by Baghelkhand and the well known Chhotanagpur Plateau with large mineral reserves.
- The extension of the Peninsular plateau can be seen as far as Jaisalmer in the West, where it has been covered by the longitudinal sand ridges and crescent-shaped sand dunes called barchans.

The North-Eastern Plateau

- It is an extension of the main Peninsular plateau in the northeast– locally known as the Meghalaya and Karbi-Anglong Plateau.
- It is separated by **Malda fault** from the Chotanagpur Plateau.
- The Meghalaya plateau is further sub-divided into three: (i) The Garo Hills; (ii) The Khasi Hills; (iii) The Jaintia Hills, named after the tribal groups inhabiting this region. An extension of this is also seen in the Karbi Anglong hills of Assam. Shillong is the highest peak in this plateau.
- Meghalaya plateau is also rich in mineral resources like coal, iron ore, sillimanite, limestone and uranium.

4) THE INDIAN DESERT

This region receives low rainfall below 150 mm per year; hence, it has arid climate with low vegetation cover. Low precipitation and high evaporation makes it a water deficit region.

It is a land of undulating topography dotted with longitudinal dunes and barchans. Land features present here are mushroom rocks, shifting dunes and oasis.

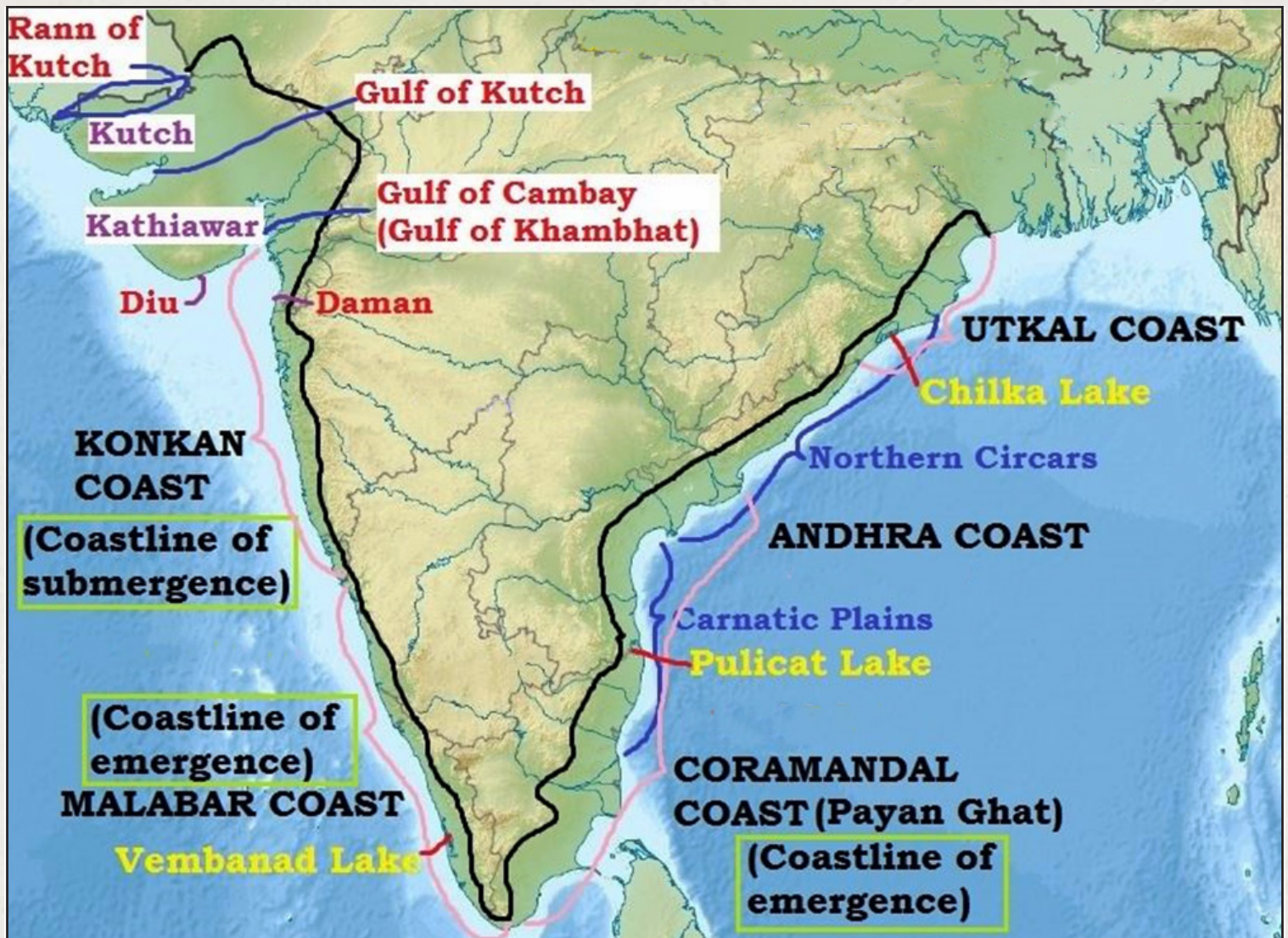
Luni is the only large river in this region.

The desert can be divided into two parts: the northern part is sloping towards Sindh and the southern towards the Rann of Kachchh.

5) THE COASTAL PLAINS

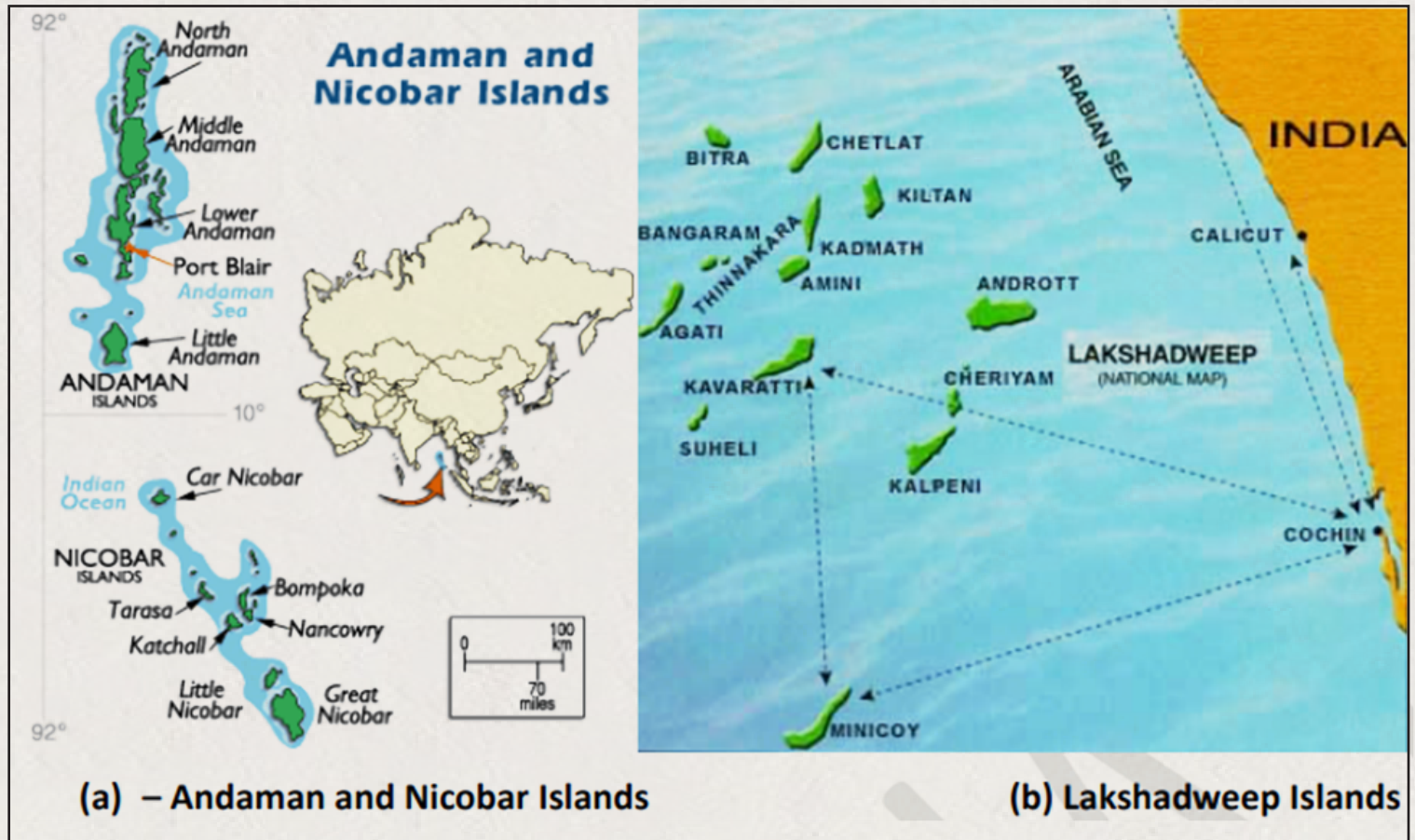
The Peninsular plateau is flanked by stretch of narrow coastal strips, running along the Arabian Sea on the west and the Bay of Bengal on the east.

Western Coastal Plains	Eastern Coastal Plains
These plains are an example of submerged coastal plain .	It is an example of an emergent coast .
Because of this submergence it is a narrow belt and provides natural conditions for the development of ports and harbors.	The eastern coastal plain is broader, leveled, and because of its emergent nature, it has less number of ports and harbors.
These plains are narrow in the middle and get broader towards north and south.	These plains are formed by the alluvial fillings. In the northern part, it is referred to as the Northern Circar, while the southern part is known as the Coromandal Coast.
No Deltas are formed in Western Coastal plains, by small rivers.	Wide Deltas are formed by large rivers on the Eastern Coastal Plains



6) THE ISLANDS

There are two major island groups in India – one in the Bay of Bengal and the other in the Arabian Sea.



Island groups of India

Andaman and Nicobar Islands	Lakshadweep Islands
Island group is an extension of submarine mountains . However, some smaller islands are volcanic in origin . Barren island, the only active volcano in India is also situated here.	All these islands are of coral origin . They have been built up by corals.
The entire group of islands is divided into two broad categories – the Andaman in the north and the Nicobar in the south. They are separated by a water body which is called the Ten-degree channel .	The entire group of islands is broadly divided by the Eleventh-degree channel , north of which is the Amini Island and to the south of the Canannore Island.
These islands lie close to equator and thus, experience equatorial climate . The islands have thick forest cover due to heavy convectional rainfall.	The largest island among these, the Minicoy, has an area of 4.5 square km only.